UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Mapes Road
Fort Meade, Maryland 20755-5350

Report Narrative

The EPA Region 3 Laboratory's Quality System is NELAP accredited. The National Environmental Laboratory Accreditation Program (NELAP) is a voluntary environmental laboratory accreditation association of State and Federal agencies

General Notes:
This report contains results for Metals analyses only. Due to the urgent need for the metals results, results for Glycol analysis will be included in Part 2 of 3 Report. All other parameters identified on the chain-of-custody form are included in separate reports. Lab Sample numbers 1202003-11, -12, -21 thru -23, and 1202003-48 thru -50 are not included in this report since these samples were designated for Volatile Organic analysis only.

For Work Order 1202003 - **This is Report 1 of 3.**

Two sample vials for the VOC analysis were received broken for 1202003-20. One sample vial for the Alcohol analysis was received broken for two samples, 1202003-01 and 1202003-20. Analysis was completed on the remaining vials All samples were received at proper temperature.

Some samples designated for the analysis of Orthophosphorous were received at the laboratory past the established holding times Therefore, all samples were analyzed using the Total Phosphate method and results for the analysis by the Orthophosphorous method are not included in this report Since the Orthophosphorous method was being used as a screening method to determine the need to analyze the sample by the Total Phosphate method, results for Total Phosphate are not impacted.

Samples designated for the analysis of Oil & Grease were received in sample containers inconsistent with the type needed for the routine extraction procedure. Therefore, all samples were extracted using the manual extraction technique

Where applicable, sample results are qualified based on the highest level concentrations of field QC contamination found in the field, equipment, or trip blanks.

Metals Analysis Note:
Uranium, strontium, lithium, tin and titanium were analyzed as an on-demand analysis.

Results for zinc for samples 1202003-36-38,-40-41,-43 were qualified estimated 'J' due to the laboratory quality control check sample results outside of criteria.

REPORT 1 of 3

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701 Mapes Road
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Site Name: Dimock Residential Groundwater **Project #: DAS R33907**

ANALYTICAL REPORT FOR SAMPLES

Station ID	Laboratory ID	Matrix	Date Sampled	Date Received
HW45	1202003-01	Drinking Water	02/06/12 10:28	02/7/12 11:17
HW45-P	1202003-02	Drinking Water	02/06/12 11:06	02/7/12 11:17
HW43-P	1202003-03	Drinking Water	02/06/12 12:19	02/7/12 11:17
HW43	1202003-04	Drinking Water	02/06/12 12:06	02/7/12 11:17
EB02	1202003-05	Water	02/05/12 15:00	02/7/12 11:17
HW45-F	1202003-06	Drinking Water	02/06/12 10:28	02/7/12 11:17
HW45-PF	1202003-07	Drinking Water	02/06/12 11:06	02/7/12 11:17
HW43-F	1202003-08	Drinking Water	02/06/12 12:06	02/7/12 11:17
EB02-F	1202003-09	Water	02/05/12 15:00	02/7/12 11:17
HW43-PF	1202003-10	Drinking Water	02/06/12 12:19	02/7/12 11:17
HW15a-P	1202003-13	Drinking Water	02/07/12 10:55	02/8/12 11:15
HW31-P	1202003-14	Drinking Water	02/06/12 18:28	02/8/12 11:15
HW30	1202003-15	Drinking Water	02/06/12 14:34	02/8/12 11:15
HW30-P	1202003-16	Drinking Water	02/06/12 15:00	02/8/12 11:15
HW31	1202003-17	Drinking Water	02/06/12 18:20	02/8/12 11:15
FB11	1202003-18	Water	02/06/12 14:36	02/8/12 11:15
HW31z	1202003-19	Drinking Water	02/06/12 18:20	02/8/12 11:15
HW15a	1202003-20	Drinking Water	02/07/12 10:47	02/8/12 11:15
HW30-PF	1202003-24	Drinking Water	02/06/12 15:00	02/8/12 11:15
HW15a-F	1202003-25	Drinking Water	02/07/12 10:47	02/8/12 11:15
HW31-F	1202003-26	Drinking Water	02/06/12 18:20	02/8/12 11:15
HW31z-F	1202003-27	Drinking Water	02/06/12 18:20	02/8/12 11:15
HW30-F	1202003-28	Drinking Water	02/06/12 14:34	02/8/12 11:15
HW31-PF	1202003-29	Drinking Water	02/06/12 18:28	02/8/12 11:15
HW15a-PF	1202003-30	Drinking Water	02/07/12 10:55	02/8/12 11:15
FB11-F	1202003-31	Water	02/06/12 14:36	02/8/12 11:15

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ANALYTICAL REPORT FOR SAMPLES

Station ID	Laboratory ID	Matrix	Date Sampled	Date Received
HW38-P	1202003-32	Drinking Water	02/08/12 10:52	02/9/12 10:45
FB13	1202003-33	Water	02/08/12 09:00	02/9/12 10:45
FB12	1202003-34	Water	02/07/12 13:35	02/9/12 10:45
HW47	1202003-35	Drinking Water	02/08/12 11:50	02/9/12 10:45
HW51	1202003-36	Drinking Water	02/07/12 13:48	02/9/12 10:45
HW38	1202003-37	Drinking Water	02/08/12 10:41	02/9/12 10:45
HW51-P	1202003-38	Drinking Water	02/07/12 13:56	02/9/12 10:45
HW47-P	1202003-39	Drinking Water	02/08/12 12:25	02/9/12 10:45
HW51-PF	1202003-40	Drinking Water	02/07/12 13:56	02/9/12 10:45
HW38-F	1202003-41	Drinking Water	02/08/12 10:41	02/9/12 10:45
HW47-PF	1202003-42	Drinking Water	02/08/12 12:25	02/9/12 10:45
HW38-PF	1202003-43	Drinking Water	02/08/12 10:52	02/9/12 10:45
FB13-F	1202003-44	Water	02/08/12 09:00	02/9/12 10:45
FB12-F	1202003-45	Water	02/07/12 13:35	02/9/12 10:45
HW51-F	1202003-46	Drinking Water	02/07/12 13:48	02/9/12 10:45
HW47-F	1202003-47	Drinking Water	02/08/12 11:50	02/9/12 10:45

Site Name: **Dimock Residential Groundwater** **Project #:** **DAS R33907**

Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1202003-01 **Station ID:** HW45 **Sample Matrix:** Drinking Water **Collected:** 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:15	EPA 245.1/R3QA131
Lab ID: 1202003-02 **Station ID:** HW45-P **Sample Matrix:** Drinking Water **Collected:** 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:19	EPA 245.1/R3QA131
Lab ID: 1202003-03 **Station ID:** HW43-P **Sample Matrix:** Drinking Water **Collected:** 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:27	EPA 245.1/R3QA131
Lab ID: 1202003-04 **Station ID:** HW43 **Sample Matrix:** Drinking Water **Collected:** 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:29	EPA 245.1/R3QA131
Lab ID: 1202003-05 **Station ID:** EB02 **Sample Matrix:** Water **Collected:** 02/05/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:31	EPA 245.1/R3QA131

Site Name: **Dimock Residential Groundwater** **Project #:** **DAS R33907**

Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1202003-06								
Station ID: HW45-F								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:33	EPA 245.1/R3QA131
Lab ID: 1202003-07								
Station ID: HW45-PF								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:35	EPA 245.1/R3QA131
Lab ID: 1202003-08								
Station ID: HW43-F								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:37	EPA 245.1/R3QA131
Lab ID: 1202003-09								
Station ID: EB02-F								
Sample Matrix: Water								
Collected: 02/05/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:39	EPA 245.1/R3QA131
Lab ID: 1202003-10								
Station ID: HW43-PF								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:41	EPA 245.1/R3QA131

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Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1202003-13								
Station ID: HW15a-P								
Sample Matrix: Drinking Water								
Collected: 02/07/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:49	EPA 245.1/R3QA131
Lab ID: 1202003-14								
Station ID: HW31-P								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:53	EPA 245.1/R3QA131
Lab ID: 1202003-15								
Station ID: HW30								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:57	EPA 245.1/R3QA131
Lab ID: 1202003-16								
Station ID: HW30-P								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:59	EPA 245.1/R3QA131
Lab ID: 1202003-17								
Station ID: HW31								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 12:01	EPA 245.1/R3QA131

Site Name: **Dimock Residential Groundwater** **Project #:** **DAS R33907**

Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1202003-18 **Station ID:** FB11 **Sample Matrix:** Water **Collected:** 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 12:03	EPA 245.1/R3QA131
Lab ID: 1202003-19 **Station ID:** HW31z **Sample Matrix:** Drinking Water **Collected:** 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 12:05	EPA 245.1/R3QA131
Lab ID: 1202003-20 **Station ID:** HW15a **Sample Matrix:** Drinking Water **Collected:** 02/07/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 12:07	EPA 245.1/R3QA131
Lab ID: 1202003-24 **Station ID:** HW30-PF **Sample Matrix:** Drinking Water **Collected:** 02/06/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 12:13	EPA 245.1/R3QA131
Lab ID: 1202003-25 **Station ID:** HW15a-F **Sample Matrix:** Drinking Water **Collected:** 02/07/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 12:15	EPA 245.1/R3QA131

Site Name: **Dimock Residential Groundwater** **Project #:** **DAS R33907**

Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1202003-26								
Station ID: HW31-F								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 11:41	EPA 245.1/R3QA131
Lab ID: 1202003-27								
Station ID: HW31z-F								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 11:45	EPA 245.1/R3QA131
Lab ID: 1202003-28								
Station ID: HW30-F								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 11:43	EPA 245.1/R3QA131
Lab ID: 1202003-29								
Station ID: HW31-PF								
Sample Matrix: Drinking Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 11:51	EPA 245.1/R3QA131
Lab ID: 1202003-30								
Station ID: HW15a-PF								
Sample Matrix: Drinking Water								
Collected: 02/07/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 11:53	EPA 245.1/R3QA131

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Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1202003-31								
Station ID: FB11-F								
Sample Matrix: Water								
Collected: 02/06/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 11:58	EPA 245.1/R3QA131
Lab ID: 1202003-32								
Station ID: HW38-P								
Sample Matrix: Drinking Water								
Collected: 02/08/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:00	EPA 245.1/R3QA131
Lab ID: 1202003-33								
Station ID: FB13								
Sample Matrix: Water								
Collected: 02/08/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:02	EPA 245.1/R3QA131
Lab ID: 1202003-34								
Station ID: FB12								
Sample Matrix: Water								
Collected: 02/07/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:04	EPA 245.1/R3QA131
Lab ID: 1202003-35								
Station ID: HW47								
Sample Matrix: Drinking Water								
Collected: 02/08/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:06	EPA 245.1/R3QA131

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Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1202003-36								
Station ID: HW51								
Sample Matrix: Drinking Water								
Collected: 02/07/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:10	EPA 245.1/R3QA131
Lab ID: 1202003-37								
Station ID: HW38								
Sample Matrix: Drinking Water								
Collected: 02/08/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:14	EPA 245.1/R3QA131
Lab ID: 1202003-38								
Station ID: HW51-P								
Sample Matrix: Drinking Water								
Collected: 02/07/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:22	EPA 245.1/R3QA131
Lab ID: 1202003-39								
Station ID: HW47-P								
Sample Matrix: Drinking Water								
Collected: 02/08/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:24	EPA 245.1/R3QA131
Lab ID: 1202003-40								
Station ID: HW51-PF								
Sample Matrix: Drinking Water								
Collected: 02/07/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:26	EPA 245.1/R3QA131

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Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1202003-41 **Station ID:** HW38-F **Sample Matrix:** Drinking Water **Collected:** 02/08/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:28	EPA 245.1/R3QA131
Lab ID: 1202003-42 **Station ID:** HW47-PF **Sample Matrix:** Drinking Water **Collected:** 02/08/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:30	EPA 245.1/R3QA131
Lab ID: 1202003-43 **Station ID:** HW38-PF **Sample Matrix:** Drinking Water **Collected:** 02/08/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:32	EPA 245.1/R3QA131
Lab ID: 1202003-44 **Station ID:** FB13-F **Sample Matrix:** Water **Collected:** 02/08/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:35	EPA 245.1/R3QA131
Lab ID: 1202003-45 **Station ID:** FB12-F **Sample Matrix:** Water **Collected:** 02/07/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:36	EPA 245.1/R3QA131

Site Name: **Dimock Residential Groundwater** **Project #:** **DAS R33907**

Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1202003-46								
Station ID: HW51-F								
Sample Matrix: Drinking Water								
Collected: 02/07/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:40	EPA 245.1/R3QA131
Lab ID: 1202003-47								
Station ID: HW47-F								
Sample Matrix: Drinking Water								
Collected: 02/08/2012								
Mercury	U		0.2	ug/L	1	02/21/12	02/22/12 12:48	EPA 245.1/R3QA131

Site Name: Dimock Residential Groundwater **Project #: DAS R33907**

QC Data
Total Metals

Analyte	Result	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BB21305 - Mercury 245.1/245.2/7470a Prep										
Blank (BB21305-BLK1)				Prepared: 02/15/12 11:00			Analyzed: 02/16/12 11:11			
Mercury	U	0.2	ug/L							
Blank (BB21305-BLK2)				Prepared: 02/15/12 11:00			Analyzed: 02/16/12 11:43			
Mercury	U	0.2	ug/L							
LCS (BB21305-BS1)				Prepared: 02/15/12 11:00			Analyzed: 02/16/12 11:13			
Mercury	1.881	0.2	ug/L	2.0000		94	85-115			
Duplicate (BB21305-DUP1)	Source: 1202003-01			Prepared: 02/15/12 11:00			Analyzed: 02/16/12 11:17			
Mercury	U	0.2	ug/L		U				20	
Duplicate (BB21305-DUP2)	Source: 1202003-13			Prepared: 02/15/12 11:00			Analyzed: 02/16/12 11:51			
Mercury	U	0.2	ug/L		U				20	
Matrix Spike (BB21305-MS1)	Source: 1202003-02			Prepared: 02/15/12 11:00			Analyzed: 02/16/12 11:25			
Mercury	1.944	0.2	ug/L	2.0000	U	97	70-130			
Matrix Spike (BB21305-MS2)	Source: 1202003-14			Prepared: 02/15/12 11:00			Analyzed: 02/16/12 11:55			
Mercury	1.945	0.2	ug/L	2.0000	U	97	70-130			
Batch BB21503 - Mercury 245.1/245.2/7470a Prep										
Blank (BB21503-BLK1)				Prepared: 02/21/12 11:45			Analyzed: 02/22/12 11:35			
Mercury	U	0.2	ug/L							
Blank (BB21503-BLK2)				Prepared: 02/21/12 11:45			Analyzed: 02/22/12 12:08			
Mercury	U	0.2	ug/L							

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QC Data
Total Metals

Analyte	Result	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BB21503 - Mercury 245.1/245.2/7470a Prep										
Blank (BB21503-BLK3)				Prepared: 02/21/12 11:45			Analyzed: 02/22/12 12:38			
Mercury	U	0.2	ug/L							
LCS (BB21503-BS1)				Prepared: 02/21/12 11:45			Analyzed: 02/22/12 11:37			
Mercury	1.733	0.2	ug/L	2.0000		87	85-115			
Duplicate (BB21503-DUP1)	Source: 1202003-26			Prepared: 02/21/12 11:45			Analyzed: 02/22/12 11:43			
Mercury	U	0.2	ug/L		U				20	
Duplicate (BB21503-DUP2)	Source: 1202003-36			Prepared: 02/21/12 11:45			Analyzed: 02/22/12 12:12			
Mercury	U	0.2	ug/L		U				20	
Duplicate (BB21503-DUP3)	Source: 1202003-46			Prepared: 02/21/12 11:45			Analyzed: 02/22/12 12:46			
Mercury	U	0.2	ug/L		U				20	
Matrix Spike (BB21503-MS1)	Source: 1202003-27			Prepared: 02/21/12 11:45			Analyzed: 02/22/12 11:47			
Mercury	1.811	0.2	ug/L	2.0000	U	91	70-130			
Matrix Spike (BB21503-MS2)	Source: 1202003-37			Prepared: 02/21/12 11:45			Analyzed: 02/22/12 12:16			
Mercury	1.75	0.2	ug/L	2.0000	U	88	70-130			
Matrix Spike (BB21503-MS3)	Source: 1202003-47			Prepared: 02/21/12 11:45			Analyzed: 02/22/12 12:50			
Mercury	1.818	0.2	ug/L	2.0000	U	91	70-130			

Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
	Total Mercury by 245.1	(Water)	Special Units: (ug/L)
1202003-01	Total Mercury by 245.1		Status is Analyzed
1202003-02	Total Mercury by 245.1		Status is Analyzed
1202003-03	Total Mercury by 245.1		Status is Analyzed
1202003-04	Total Mercury by 245.1		Status is Analyzed
1202003-05	Total Mercury by 245.1		Status is Analyzed
1202003-06	Total Mercury by 245.1		Status is Analyzed
1202003-07	Total Mercury by 245.1		Status is Analyzed
1202003-08	Total Mercury by 245.1		Status is Analyzed
1202003-09	Total Mercury by 245.1		Status is Analyzed
1202003-10	Total Mercury by 245.1		Status is Analyzed
1202003-13	Total Mercury by 245.1		Status is Analyzed
1202003-14	Total Mercury by 245.1		Status is Analyzed
1202003-15	Total Mercury by 245.1		Status is Analyzed
1202003-16	Total Mercury by 245.1		Status is Analyzed
1202003-17	Total Mercury by 245.1		Status is Analyzed
1202003-18	Total Mercury by 245.1		Status is Analyzed
1202003-19	Total Mercury by 245.1		Status is Analyzed
1202003-20	Total Mercury by 245.1		Status is Analyzed
1202003-24	Total Mercury by 245.1		Status is Analyzed
1202003-25	Total Mercury by 245.1		Status is Analyzed
1202003-26	Total Mercury by 245.1		Status is Analyzed
1202003-27	Total Mercury by 245.1		Status is Analyzed
1202003-28	Total Mercury by 245.1		Status is Analyzed
1202003-29	Total Mercury by 245.1		Status is Analyzed
1202003-30	Total Mercury by 245.1		Status is Analyzed
1202003-31	Total Mercury by 245.1		Status is Analyzed
1202003-32	Total Mercury by 245.1		Status is Analyzed
1202003-33	Total Mercury by 245.1		Status is Analyzed
1202003-34	Total Mercury by 245.1		Status is Analyzed
1202003-35	Total Mercury by 245.1		Status is Analyzed
1202003-36	Total Mercury by 245.1		Status is Analyzed
1202003-37	Total Mercury by 245.1		Status is Analyzed
1202003-38	Total Mercury by 245.1		Status is Analyzed
1202003-39	Total Mercury by 245.1		Status is Analyzed
1202003-40	Total Mercury by 245.1		Status is Analyzed
1202003-41	Total Mercury by 245.1		Status is Analyzed
1202003-42	Total Mercury by 245.1		Status is Analyzed
1202003-43	Total Mercury by 245.1		Status is Analyzed
1202003-44	Total Mercury by 245.1		Status is Analyzed
1202003-45	Total Mercury by 245.1		Status is Analyzed
1202003-46	Total Mercury by 245.1		Status is Analyzed
1202003-47	Total Mercury by 245.1		Status is Analyzed

Site Name: Dimock Residential Groundwater **Project #: DAS R33907**

Notes and Definitions

%REC	Percent Recovery
RPD	Relative Percent Difference
U	Analyte included in the analysis, but not detected at or above the quantitation limit.

Quantitation Limit: The lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method and that takes into account analytical adjustments made during sample preparation and analysis

REPORTING PROTOCOL FOR SOLID SAMPLE RESULTS: Percent Solids (percent dry wt at 105 degrees C) determinations are routinely performed for most organic and inorganic analyses. Consequently, these samples are analyzed wet and converted to a dry weight result for reporting purposes. If metals and mercury analyses are requested, they are routinely prepared for analyses by an initial drying at 60 degrees C, homogenized prior to digestion, and are analyzed and reported on a dry weight basis. Oil-type samples are analyzed and reported on a wet weight basis for all analyses because of the nature of the sample matrix. Any exceptions to this protocol will be noted in the narrative.

Tube	Sample Name	Sample Type	Weight	Volume	Dilution
S:1	Calibration Blank	Standard	1.00	1.00	1.00
S:2	Standard #1 (0.2)	Standard	1.00	1.00	1.00
S:3	Standard #2 (0.5)	Standard	1.00	1.00	1.00
S:4	Standard #3 (1.0)	Standard	1.00	1.00	1.00
S:5	Standard #4 (2.0)	Standard	1.00	1.00	1.00
S:6	Standard #5 (3.0)	Standard	1.00	1.00	1.00
S:7	Standard #6 (5.0)	Standard	1.00	1.00	1.00
S:5	ICV	ICV	1.00	1.00	1.00
S:1	ICB	ICB	1.00	1.00	1.00
1:1	LCS	LCS	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:2	Method Blank 1	Method Blank	1.00	1.00	1.00
1:3	QC Spike 1	QC Spike	1.00	1.00	1.00
1:4	0.2 std as sample	Unknown	1.00	1.00	1.00
1:5	1202001-23	Unknown	1.00	1.00	1.00
1:6	1202001-23dup	Duplicate	1.00	1.00	1.00
1:7	1202001-24	Unknown	1.00	1.00	1.00
1:8	1202001-24spike	Matrix Spike	1.00	1.00	1.00
1:9	1202001-25	Unknown	1.00	1.00	1.00
1:10	1202001-26	Unknown	1.00	1.00	1.00
1:11	1202001-27	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:12	1202001-28	Unknown	1.00	1.00	1.00
1:13	1202001-29	Unknown	1.00	1.00	1.00
1:14	1202001-30	Unknown	1.00	1.00	1.00
1:15	1202001-31	Unknown	1.00	1.00	1.00
1:16	1202001-32	Unknown	1.00	1.00	1.00
1:17	Method Blank 1	Method Blank	1.00	1.00	1.00
1:18	QC Spike 1	QC Spike	1.00	1.00	1.00
1:19	1202003-01	Unknown	1.00	1.00	1.00
1:20	1202003-01dup	Duplicate	1.00	1.00	1.00
1:21	1202003-02	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:22	1202003-02spike	Matrix Spike	1.00	1.00	1.00
1:23	1202003-03	Unknown	1.00	1.00	1.00
1:24	1202003-04	Unknown	1.00	1.00	1.00
1:25	1202003-05	Unknown	1.00	1.00	1.00
1:26	1202003-06	Unknown	1.00	1.00	1.00
1:27	1202003-07	Unknown	1.00	1.00	1.00
1:28	1202003-08	Unknown	1.00	1.00	1.00
1:29	1202003-09	Unknown	1.00	1.00	1.00
1:30	1202003-10	Unknown	1.00	1.00	1.00
1:31	Method Blank 2	Method Blank	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:32	1202003-13	Unknown	1.00	1.00	1.00
1:33	1202003-13dup	Duplicate	1.00	1.00	1.00
1:34	1202003-14	Unknown	1.00	1.00	1.00
1:35	1202003--14spike	Matrix Spike	1.00	1.00	1.00
1:36	1202003-15	Unknown	1.00	1.00	1.00
1:37	1202003-16	Unknown	1.00	1.00	1.00
1:38	1202003-17	Unknown	1.00	1.00	1.00

not this work order

DRAFT

WO 1202004 003,18

2/16/12

Tube	Sample Name	Sample Type	Weight	Volume	Dilution
1:39	1202003-18	Unknown	1.00	1.00	1.00
1:40	1202003-19	Unknown	1.00	1.00	1.00
1:41	1202003-20	Unknown	1.00	1.00	1.00
S:5	CCV Change to 3ppb	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:42	1202003-24	Unknown	1.00	1.00	1.00
1:43	1202003-25	Unknown	1.00	1.00	1.00
S:5	CCV Change to 3ppb	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00

Denuded 8 pts
WO 1202003
[signature] 2/16/12

DRAFT

CETAC Hg Analysis Report

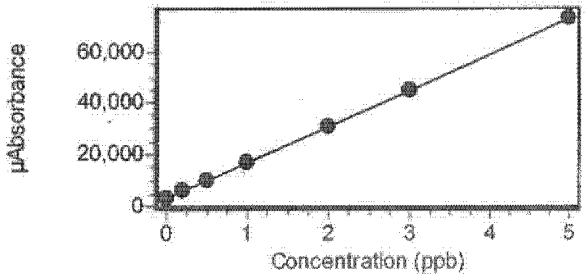
Analyst: Mercury Analyzer
Worksheet file: C:\Program Files\QuickTrace\Worksheets\Dimock 8th.wsz
Date Started: 2/15/2012 1:19:52 PM
Comment:

Results

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol. ODF
Calibration Blank	STD	02/16/12 10:14:18 am	0.0000	3199	1.03		1.00	1.
							1.00	
Standard #1 (.0.2)	STD	02/16/12 10:16:16 am	0.2000	6037	0.25		1.00	1.
							1.00	
Standard #2 (0.5)	STD	02/16/12 10:18:14 am	0.5000	10213	0.48		1.00	1.
							1.00	
Standard #3 (1.0)	STD	02/16/12 10:20:13 am	1.0000	17311	0.43		1.00	1.
							1.00	
Standard #4 (2.0)	STD	02/16/12 10:22:12 am	2.0000	31288	0.47		1.00	1.
							1.00	
Standard #5 (3.0)	STD	02/16/12 10:24:12 am	3.0000	45331	0.44		1.00	1.
							1.00	
Standard #6 (5.0)	STD	02/16/12 10:26:12 am	5.0000	72589	0.22		1.00	1.
							1.00	

Calibration

Equation: A = 3333.875 + 13900.120C
R2: 0.99995
SEE: 203.5534
Flags:



ICV	ICV	02/16/12 10:28:12 am	2.0100	31275	0.29		1.00	1.
% Recovery 100.51							1.00	
ICB	ICB	02/16/12 10:30:09 am	-0.0060	-3251	0.24		1.00	1.
							1.00	
LCS	LCS	02/16/12 10:32:06 am	1.9430	30348	0.91		1.00	1.
% Recovery 97.17							1.00	

Dimock WO 1202004-003 SD
Lisa Price 2/16/12

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt. ODF	Vol.
CCV	CCV	02/16/12 10:34:05 am	2.0160	31350	0.47		1.00	1.0
% Recovery 100.78							1.00	
CCB	CCB	02/16/12 10:36:02 am	-0.0051	3263	0.15		1.00	1.0
							1.00	
Method Blank 1	MB	02/16/12 10:37:59 am	-0.0155	3118	0.33		1.00	1.0
							1.00	
QC Spike 1	SPK	02/16/12 10:39:57 am	1.8630	29227	0.31		1.00	1.0
% Recovery 93.92							1.00	
0.2 std as sample	UNK	02/16/12 10:41:55 am	0.1931	6018	0.30		1.00	1.0
							1.00	
1202001-23	UNK	02/16/12 10:43:53 am	-0.0266	2965	0.50		1.00	1.0
							1.00	
1202001-23dup	DUP	02/16/12 10:45:51 am	-0.0225	3022	0.58		1.00	1.0
RPD 0.00							1.00	
1202001-24	UNK	02/16/12 10:47:50 am	-0.0436	2728	0.54		1.00	1.0
							1.00	
1202001-24spike	MSK	02/16/12 10:49:49 am	1.8210	28644	0.55		1.00	1.0
% Recovery 93.22							1.00	
1202001-25	UNK	02/16/12 10:51:48 am	-0.0151	3124	0.32		1.00	1.0
							1.00	
1202001-26	UNK	02/16/12 10:53:48 am	-0.0073	3233	0.15		1.00	1.0
							1.00	
1202001-27	UNK	02/16/12 10:55:48 am	-0.0136	3145	0.20		1.00	1.0
							1.00	
CCV	CCV	02/16/12 10:57:47 am	2.0300	31547	0.53		1.00	1.0
% Recovery 101.48							1.00	
CCB	CCB	02/16/12 10:59:44 am	-0.0034	3287	0.20		1.00	1.0
							1.00	
1202001-28	UNK	02/16/12 11:01:44 am	-0.0308	2905	0.33		1.00	1.0
							1.00	
1202001-29	UNK	02/16/12 11:03:41 am	-0.0258	2975	0.46		1.00	1.0
							1.00	
1202001-30	UNK	02/16/12 11:05:38 am	-0.0151	3124	0.23		1.00	1.0
							1.00	

Dimock WO 1202004-003

Sample Name		Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol. ODF
1202001-31		UNK	02/16/12 11:07:35 am	-0.0118	3169	0.19		1.00	1.0
								1.00	
1202001-32		UNK	02/16/12 11:09:32 am	-0.0027	3297	0.30		1.00	1.0
								1.00	
Method Blank 1		MB	02/16/12 11:11:30 am	-0.0376	2812	0.32		1.00	1.0
								1.00	
QC Spike 1		SPK	02/16/12 11:13:28 am	1.8810	29482	0.22		1.00	1.0
% Recovery	95.94							1.00	
1202003-01		UNK	02/16/12 11:15:26 am	-0.0211	3041	0.25		1.00	1.0
								1.00	
1202003-01dup		DUP	02/16/12 11:17:25 am	-0.0250	2986	0.25	D	1.00	1.0
RPD	0.00							1.00	
1202003-02		UNK	02/16/12 11:19:24 am	-0.0225	3022	0.29		1.00	1.0
								1.00	
CCV		CCV	02/16/12 11:21:24 am	2.0070	31234	0.51		1.00	1.0
% Recovery	100.36							1.00	
CCB		CCB	02/16/12 11:23:21 am	-0.0025	3300	0.42		1.00	1.0
								1.00	
1202003-02spike		MSK	02/16/12 11:25:20 am	1.9440	30357	0.34		1.00	1.0
% Recovery	97.33							1.00	
1202003-03		UNK	02/16/12 11:27:19 am	-0.0205	3049	0.45		1.00	1.0
								1.00	
1202003-04		UNK	02/16/12 11:29:19 am	-0.0269	2960	0.16		1.00	1.0
								1.00	
1202003-05		UNK	02/16/12 11:31:16 am	-0.0279	2946	0.40		1.00	1.0
								1.00	
1202003-06		UNK	02/16/12 11:33:13 am	-0.0245	2993	0.24		1.00	1.0
								1.00	
1202003-07		UNK	02/16/12 11:35:10 am	-0.0262	2970	0.39		1.00	1.0
								1.00	
1202003-08		UNK	02/16/12 11:37:08 am	-0.0158	3114	0.30		1.00	1.0
								1.00	
1202003-09		UNK	02/16/12 11:39:05 am	-0.0282	2941	0.21		1.00	1.0
								1.00	

DIM0200809 DIM0200833

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol ODF
1202003-10	UNK	02/16/12 11:41:03 am	-0.0315	2896	0.20		1.00	1.
							1.00	
Method Blank 2	MB	02/16/12 11:43:02 am	-0.0153	3120	0.28		1.00	1.
							1.00	
CCV	CCV	02/16/12 11:45:01 am	2.0130	31312	0.39		1.00	1.
% Recovery 100.64							1.00	
CCB	CCB	02/16/12 11:46:58 am	-0.0034	3287	0.28		1.00	1.
							1.00	
1202003-13	UNK	02/16/12 11:48:57 am	-0.0250	2986	0.36		1.00	1.
							1.00	
1202003-13dup	DUP	02/16/12 11:50:56 am	-0.0075	3230	0.36		1.00	1.
RPD 0.00							1.00	
1202003-14	UNK	02/16/12 11:52:55 am	-0.0103	3191	0.38		1.00	1.
							1.00	
1202003--14spike	MSK	02/16/12 11:54:54 am	1.9450	30370	0.40		1.00	1.
% Recovery 97.77							1.00	
1202003-15	UNK	02/16/12 11:56:54 am	-0.0132	3151	0.16		1.00	1.
							1.00	
1202003-16	UNK	02/16/12 11:58:51 am	-0.0149	3127	0.43		1.00	1.
							1.00	
1202003-17	UNK	02/16/12 12:00:49 pm	-0.0138	3141	0.31		1.00	1.
							1.00	
1202003-18	UNK	02/16/12 12:02:46 pm	-0.0029	3293	0.37		1.00	1.
							1.00	
1202003-19	UNK	02/16/12 12:04:43 pm	-0.0125	3160	0.37		1.00	1.
							1.00	
1202003-20	UNK	02/16/12 12:06:41 pm	-0.0121	3166	0.44		1.00	1.
							1.00	
CCV TV=3.0 3.104/3=103%	CCV	02/16/12 12:08:41 pm	3.1040	46482	0.54	Q	1.00	1.
% Recovery 155.21							1.00	
CCB	CCB	02/16/12 12:10:38 pm	0.0005	3340	0.56		1.00	1.
							1.00	
1202003-24	UNK	02/16/12 12:12:36 pm	-0.0101	3193	0.43		1.00	1.
							1.00	

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Dimock WO 1202003 00358

Lisafrees 2/16/12

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol
							ODF	
1202003-25	UNK	02/16/12 12:14:34 pm	-0.0084	3217	0.56		1.00	1.
							1.00	
CCV TV=3.0 3099/3. = 103%	CCV	02/16/12 12:16:33 pm	3.0990	46417	0.67	Q	1.00	1.
% Recovery 154.97							1.00	
CCB	CCB	02/16/12 12:18:30 pm	-0.0001	3333	0.52		1.00	1.
							1.00	

Dimock WO# 1202003 GO3758
Initials 2/16/12

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Analysis Parameters

Instrument M-7500 Mercury Analyzer

Conditions

Gas flow (mL/min)	Sample Uptake (s)	Rinse (s)	Read delay (s)	Replicates (#)	Replicate time (s)	Pump speed (%)	Wavelength (nm)
135	40.00	70.00	40.00	4	3.50	100	253.65

Instrumental Zero

Zero before first sample: No

Zero periodically: Yes

Before each calibration.

Baseline Correction

#1 Start time (s)	#1 End time (s)	#2 Start time (s)	#2 End time (s)
10.00	17.00	95.00	100.00

Standby Mode

Enabled: Yes

Standby Options: pump off, lamp off

Autodilution

Enabled: No

Condition:

Tube # range:

If no autodilution tubes remaining

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Calibration

Settings

Algorithm	Through blank	Weighted fit	Cal. Type	Racalibration rate	Reslope rate	Reslope standard
Linear	No	No	Normal	0	0	N/A

Limits

Calibration slope		Reslope		Coeff. of Determination
Lower (%)	Upper (%)	Lower (%)	Upper (%)	
20	150	75	125	0.99500

Error action: Flag and continue

QC

GLP Override: Yes

QC Tests

Dimock WO 1202~~0004~~ 003

SB

CCB

Concentration (ppb)
0.2000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

ICB

Concentration (ppb)
0.2000

Failure flag: Z

Error action for manually inserted QC: Flag and continue

CCV

Concentration (ppb)	Low Limit %	High Limit %
2.0000	90.0000	110.0000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

ICV

Concentration (ppb)	Low Limit %	High Limit %
2.0000	95.0000	105.0000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

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LCS

Concentration (ppb)	Low Limit %	High Limit %
2.0000	90.0000	110.0000

Failure flag: L

Error action for manually inserted QC: Flag and continue

DUP

Concentration (ppb)	Low Limit (ppb)	High Limit (ppb)	RPD
5.0000	0.0000	5.0000	20.0000

Failure flag: D

Error action for manually inserted QC: Flag and continue

SPK

Concentration (ppb)	Low Limit %	High Limit %	Min Rec	Sample µAbs
2.0000	85.0000	115.0000	50.0000	0.0000

Failure flag: W

Error action for manually inserted QC: Flag and continue

Dimock WO 12/2004 003 SS

MSK

Concentration (ppb)	Low Limit %	High Limit %
2.0000	70.0000	130.0000

Failure flag: N

Error action for manually inserted QC: Stop analysis

MB

Concentration (ppb)
0.0005

Failure flag: Z

Error action for manually inserted QC: Flag and continue

Dimock WO# 1202004
003
58

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S:1	Calibration Blank	Standard	1.00	1.00	1.00
S:2	Standard #1 (.0.2)	Standard	1.00	1.00	1.00
S:3	Standard #2 (0.5)	Standard	1.00	1.00	1.00
S:4	Standard #3 (1.0)	Standard	1.00	1.00	1.00
S:5	Standard #4 (2.0)	Standard	1.00	1.00	1.00
S:6	Standard #5 (3.0)	Standard	1.00	1.00	1.00
S:7	Standard #6 (5.0)	Standard	1.00	1.00	1.00
S:5	ICV	ICV	1.00	1.00	1.00
S:1	ICB	ICB	1.00	1.00	1.00
1:1	LCS	LCS	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:2	Method Blank 1	Method Blank	1.00	1.00	1.00
1:3	QC Spike 1	QC Spike	1.00	1.00	1.00
1:4	0.2 std as sample	Unknown	1.00	1.00	1.00
1:5	1202003-26	Unknown	1.00	1.00	1.00
1:6	1202003-26dup	Duplicate	1.00	1.00	1.00
1:7	1202003-27	Unknown	1.00	1.00	1.00
1:8	1202003-27spike	Matrix Spike	1.00	1.00	1.00
1:9	1202003-28	Unknown	1.00	1.00	1.00
1:10	1202003-29	Unknown	1.00	1.00	1.00
1:11	1202003-30	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:12	1202003-31	Unknown	1.00	1.00	1.00
1:13	1202003-32	Unknown	1.00	1.00	1.00
1:14	1202003-33	Unknown	1.00	1.00	1.00
1:15	1202003-34	Unknown	1.00	1.00	1.00
1:16	1202003-35	Unknown	1.00	1.00	1.00
1:17	Method Blank 2	Method Blank	1.00	1.00	1.00
1:18	1202003-36	Unknown	1.00	1.00	1.00
1:19	1202003-36dup	Duplicate	1.00	1.00	1.00
1:20	1202003-37	Unknown	1.00	1.00	1.00
1:21	1202003-37spike	Matrix Spike	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:22	1202003-38	Unknown	1.00	1.00	1.00
1:23	1202003-39	Unknown	1.00	1.00	1.00
1:24	1202003-40	Unknown	1.00	1.00	1.00
1:25	1202003-41	Unknown	1.00	1.00	1.00
1:26	1202003-42	Unknown	1.00	1.00	1.00
1:27	1202003-43	Unknown	1.00	1.00	1.00
1:28	1202003-44	Unknown	1.00	1.00	1.00
1:29	1202003-45	Unknown	1.00	1.00	1.00
1:30	Method Blank 3	Method Blank	1.00	1.00	1.00
1:31	1202003-46	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:32	1202003-46dup	Duplicate	1.00	1.00	1.00
1:33	1202003-47	Unknown	1.00	1.00	1.00
1:34	1202003-47spike	Matrix Spike	1.00	1.00	1.00
1:35	Method Blank 1	Method Blank	1.00	1.00	1.00
1:36	QC Spike 2 & 3 SY 2/22/12	QC Spike	1.00	1.00	1.00
1:37	1202004-01	Unknown	1.00	1.00	1.00
1:38	1202004-01dup	Duplicate	1.00	1.00	1.00

DRAFT

Check 100# 1202003 2/22/12

1:39	1202004-02	Unknown	1.00	1.00	1.00
1:40	1202004-02spike	Matrix Spike	1.00	1.00	1.00
1:41	1202004-03	Unknown	1.00	1.00	1.00
S:5	CCV — change to 3ppb	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:42	1202004-04	Unknown	1.00	1.00	1.00
1:43	1202004-06	Unknown	1.00	1.00	1.00
1:44	1202004-07	Unknown	1.00	1.00	1.00
1:45	1202004-08	Unknown	1.00	1.00	1.00
1:46	1202004-09	Unknown	1.00	1.00	1.00
1:47	1202004-11	Unknown	1.00	1.00	1.00
1:48	1202004-13	Unknown	1.00	1.00	1.00
S:5	CCV - change to 3ppb	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00

not this WO

Dimock WO# 1202003 [signature] 2/22/12

DRAFT

CETAC Hg Analysis Report

Analyst: Mercury Analyzer
Worksheet file: C:\Program Files\QuickTrace\Worksheets\Dimock 9th.wsz
Date Started: 2/21/2012 1:20:55 PM
Comment:

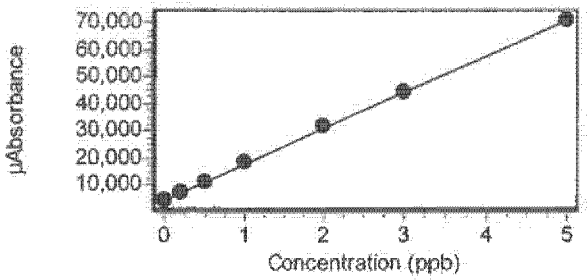
Results

Sample Name	Type	Date/Time	Conc (ug/l)	µAbs	%RSD	Flags	Wt.	Vol.	DF
Calibration Blank	STD	02/22/12 11:11:02 am	0.0000	4204	1.75		1.00	1.0	1.00
Standard #1 (.0.2)	STD	02/22/12 11:12:59 am	0.2000	6983	0.97		1.00	1.0	1.00
Standard #2 (0.5)	STD	02/22/12 11:14:58 am	0.5000	11070	0.53		1.00	1.0	1.00
Standard #3 (1.0)	STD	02/22/12 11:16:56 am	1.0000	18176	0.29		1.00	1.0	1.00
Standard #4 (2.0)	STD	02/22/12 11:18:56 am	2.0000	31513	0.34		1.00	1.0	1.00
Standard #5 (3.0)	STD	02/22/12 11:20:56 am	3.0000	44671	0.31		1.00	1.0	1.00
Standard #6 (5.0)	STD	02/22/12 11:22:56 am	5.0000	70785	1.36		1.00	1.0	1.00

DRAFT

Calibration

Equation: A = 4509.933 + 13319.130C
R2: 0.99985
SEE: 327.9056
Flags:



ICV	ICV	02/22/12 11:24:55 am	2.0680	32054	1.52		1.00	1.0
% Recovery 103.40							1.00	
ICB	ICB	02/22/12 11:26:52 am	-0.0152	4307	1.57		1.00	1.0
							1.00	
LCS	LCS	02/22/12 11:28:50 am	1.8320	28910	0.33		1.00	1.0
% Recovery 91.60							1.00	

Dimock WO# 1202003
Lufino 2/22/12

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol. ODF
CCV	CCV	02/22/12 11:30:49 am	2.1140	32662	0.72		1.00	1.0
% Recovery 105.68							1.00	
CCB	CCB	02/22/12 11:32:46 am	-0.0122	4348	0.54		1.00	1.0
							1.00	
Method Blank 1	MB	02/22/12 11:34:43 am	-0.2518	1157	0.36		1.00	1.0
							1.00	
QC Spike 1	SPK	02/22/12 11:36:41 am	1.7330	27597	0.33		1.00	1.0
% Recovery ~~98.26~~							1.00	
0.2 std as sample TV= 0.2 / 0.1971 = 98%	UNK	02/22/12 11:38:39 am	0.1971	7135	0.67		1.00	1.0
							1.00	
1202003-26	UNK	02/22/12 11:40:37 am	-0.2494	1188	0.28		1.00	1.0
							1.00	
1202003-26dup	DUP	02/22/12 11:42:35 am	-0.2542	1125	0.26	D	1.00	1.0
RPD 0.00							1.00	
1202003-27	UNK	02/22/12 11:44:34 am	-0.2520	1153	0.46		1.00	1.0
							1.00	
1202003-27spike	MSK	02/22/12 11:46:33 am	1.8110	28637	0.28		1.00	1.0
% Recovery 103.17							1.00	
1202003-28	UNK	02/22/12 11:48:32 am	-0.2483	1203	0.17		1.00	1.0
							1.00	
1202003-29	UNK	02/22/12 11:50:32 am	-0.2509	1169	0.36		1.00	1.0
							1.00	
1202003-30	UNK	02/22/12 11:52:32 am	-0.2498	1182	0.18		1.00	1.0
							1.00	
CCV	CCV	02/22/12 11:54:31 am	2.0900	32347	0.80		1.00	1.0
% Recovery 104.50							1.00	
CCB	CCB	02/22/12 11:56:28 am	-0.0033	4466	0.50		1.00	1.0
							1.00	
1202003-31	UNK	02/22/12 11:58:28 am	-0.2452	1244	0.33		1.00	1.0
							1.00	
1202003-32	UNK	02/22/12 12:00:25 pm	-0.2466	1225	0.16		1.00	1.0
							1.00	
1202003-33	UNK	02/22/12 12:02:22 pm	-0.2500	1181	0.14		1.00	1.0
							1.00	

DRAFT

Dimock WO# 1202003
Dmyfraco 2/22/12

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol. ODF
1202003-34	UNK	02/22/12 12:04:19 pm	-0.2518	1157	0.24		1.00 1.00	1.0
1202003-35	UNK	02/22/12 12:06:17 pm	-0.2507	1170	0.37		1.00 1.00	1.0
Method Blank 2	MB	02/22/12 12:08:14 pm	-0.2502	1177	0.37		1.00 1.00	1.0
1202003-36	UNK	02/22/12 12:10:12 pm	-0.2569	1088	0.31		1.00 1.00	1.0
1202003-36dup RPD 0.00	DUP	02/22/12 12:12:11 pm	-0.2579	1076	0.43	D	1.00 1.00	1.0
1202003-37	UNK	02/22/12 12:14:09 pm	-0.2491	1191	0.39		1.00 1.00	1.0
1202003-37spike % Recovery 99.95	MSK	02/22/12 12:16:08 pm	1.7500	27816	0.32		1.00 1.00	1.0
CCV % Recovery 103.36	CCV	02/22/12 12:18:08 pm	2.0670	32043	0.51		1.00 1.00	1.0
CCB	CCB	02/22/12 12:20:05 pm	-0.0051	4442	0.60		1.00 1.00	1.0
1202003-38	UNK	02/22/12 12:22:04 pm	-0.2579	1076	0.27		1.00 1.00	1.0
1202003-39	UNK	02/22/12 12:24:03 pm	-0.2586	1066	0.63		1.00 1.00	1.0
1202003-40	UNK	02/22/12 12:26:03 pm	-0.2561	1099	0.39		1.00 1.00	1.0
1202003-41	UNK	02/22/12 12:28:00 pm	-0.2559	1101	0.58		1.00 1.00	1.0
1202003-42	UNK	02/22/12 12:29:57 pm	-0.2330	1407	0.48		1.00 1.00	1.0
1202003-43	UNK	02/22/12 12:31:54 pm	-0.2352	1378	0.23		1.00 1.00	1.0
1202003-44	UNK	02/22/12 12:33:52 pm	-0.2347	1384	0.48		1.00 1.00	1.0
1202003-45	UNK	02/22/12 12:35:49 pm	-0.2359	1368	0.40		1.00 1.00	1.0

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Dimock WO# 1202003
2/22/12

Sample Name	Type	Date/Time	Conc (mg/l)	µAbs	%RSD	Flags	Wt.	Vol. ODF
Method Blank 3	MB	02/22/12 12:37:47 pm	-0.2358	1369	0.23		1.00	1.0
							1.00	
1202003-46	UNK	02/22/12 12:39:46 pm	-0.2328	1410	0.53		1.00	1.0
							1.00	
CCV	CCV	02/22/12 12:41:45 pm	2.0870	32312	0.55		1.00	1.0
% Recovery 104.37							1.00	
CCB	CCB	02/22/12 12:43:42 pm	-0.0092	4388	1.37		1.00	1.0
							1.00	
1202003-46dup	DUP	02/22/12 12:45:41 pm	-0.2340	1394	0.30	D	1.00	1.0
RPD 0.00							1.00	
1202003-47	UNK	02/22/12 12:47:40 pm	-0.2322	1417	0.33		1.00	1.0
							1.00	
1202003-47spike	MSK	02/22/12 12:49:39 pm	1.8180	28719	0.30		1.00	1.0
% Recovery 102.49							1.00	
Method Blank 1	MB	02/22/12 12:51:38 pm	-0.2301	1446	0.13		1.00	1.0
							1.00	
QC Spike 2 & 1	SPK	02/22/12 12:53:38 pm	1.7980	28452	0.24		1.00	1.0
% Recovery 101.38							1.00	
1202004-01	UNK	02/22/12 12:55:35 pm	-0.2287	1464	0.09		1.00	1.0
							1.00	
1202004-01dup	DUP	02/22/12 12:57:33 pm	-0.2305	1440	0.45	D	1.00	1.0
RPD 0.00							1.00	
1202004-02	UNK	02/22/12 12:59:30 pm	-0.2291	1459	0.24		1.00	1.0
							1.00	
1202004-02spike	MSK	02/22/12 01:01:27 pm	1.7520	27846	0.40		1.00	1.0
% Recovery 99.06							1.00	
1202004-03	UNK	02/22/12 01:03:25 pm	-0.2244	1522	0.27		1.00	1.0
							1.00	
CCV	CCV	02/22/12 01:05:24 pm	3.1160	46008	0.63	Q	1.00	1.0
% Recovery ~~155.78~~							1.00	
CCB	CCB	02/22/12 01:07:21 pm	-0.0090	4391	0.55		1.00	1.0
							1.00	
1202004-04	UNK	02/22/12 01:09:20 pm	-0.2273	1483	0.45		1.00	1.0
							1.00	

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Dimock WO# 1202003

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt. ODF	Vol
1202004-06	UNK	02/22/12 01:11:18 pm	-0.2249	1514	0.18		1.00 1.00	1.
1202004-07	UNK	02/22/12 01:13:17 pm	-0.2239	1527	0.25		1.00 1.00	1.
1202004-08 not this WO	UNK	02/22/12 01:15:16 pm	-0.2255	1506	0.40		1.00 1.00	1.
1202004-09	UNK	02/22/12 01:17:15 pm	-0.2266	1491	0.22		1.00 1.00	1.
1202004-11	UNK	02/22/12 01:19:14 pm	-0.2271	1485	0.16		1.00 1.00	1.
1202004-13	UNK	02/22/12 01:21:14 pm	-0.2191	1592	0.18		1.00 1.00	1.
CCV TV= 3ppb	CCV	02/22/12 01:23:13 pm	3.0550	45202	0.54	Q	1.00 1.00	1.
% Recovery ~~152.76~~								
CCB	CCB	02/22/12 01:25:10 pm	-0.0147	4315	0.69		1.00 1.00	1.

Dimock WO# 1202003 2/22/12

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Analysis Parameters

Instrument M-7500 Mercury Analyzer

Conditions

Gas flow (mL/min)	Sample Uptake (s)	Rinse (s)	Read delay (s)	Replicates (#)	Replicate time (s)	Pump speed (%)	Wavelength (nm)
135	40.00	70.00	40.00	4	3.50	100	253.65

Instrumental Zero

Zero before first sample: No

Zero periodically: Yes

Before each calibration.

Baseline Correction

#1 Start time (s)	#1 End time (s)	#2 Start time (s)	#2 End time (s)
10.00	17.00	95.00	100.00

Standby Mode

Enabled: Yes

Standby Options: pump off, lamp off

Autodilution

Enabled: No

Condition:

Tube # range:

If no autodilution tubes remaining

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Calibration

Settings

Algorithm	Through blank	Weighted fit	Cal. Type	Racalibration rate	Reslope rate	Reslope standard
Linear	No	No	Normal	0	0	N/A

Limits

Calibration slope		Reslope		Coeff. of Determination
Lower (%)	Upper (%)	Lower (%)	Upper (%)	
20	150	75	125	0.99500

Error action: Flag and continue

QC

GLP Override: Yes

QC Tests

Dimock WO# 1202003

CCB

Concentration (ppb)
0.2000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

ICB

Concentration (ppb)
0.2000

Failure flag: Z

Error action for manually inserted QC: Flag and continue

CCV

Concentration (ppb)	Low Limit %	High Limit %
2.0000	90.0000	110.0000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

ICV

Concentration (ppb)	Low Limit %	High Limit %
2.0000	95.0000	105.0000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

LCS

Concentration (ppb)	Low Limit %	High Limit %
2.0000	90.0000	110.0000

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Failure flag: L

Error action for manually inserted QC: Flag and continue

DUP

Concentration (ppb)	Low Limit (ppb)	High Limit (ppb)	RPD
5.0000	0.0000	5.0000	20.0000

Failure flag: D

Error action for manually inserted QC: Flag and continue

SPK

Concentration (ppb)	Low Limit %	High Limit %	Min Rec	Sample µAbs
2.0000	85.0000	115.0000	50.0000	0.0000

Failure flag: W

Error action for manually inserted QC: Flag and continue

Dimock WO# 1202003

MSK

Concentration (ppb)	Low Limit %	High Limit %
2.0000	70.0000	130.0000

Failure flag: N

Error action for manually inserted QC: Stop analysis

MB

Concentration (ppb)
0.0005

Failure flag: Z

Error action for manually inserted QC: Flag and continue

Dimock WO # 1202003

DRAFT

EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB21305 bch_mercury.rpt

DRAFT

Project: DAS R33907

Work Order No: 1202003

Site Name: Dimock Residential Groundwater

Analysis: Total Mercury by 245.1

Matrix: Water

Location: Analyst
EPA #3 Shelf 2B

Client: OSWER - Emergency Response

Account#: 2012T03N303DC6A3TARS0(

Method/SOP: EPA 245.1/R3QA131

Merck 8°C

Data for WO# 1202001, Batch BB20904 re-run and

Comments from WO: WO# 1202003, Batch BB21302

EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD, PREPARATION LOG PNB186

Analyst: [signature]	NOTE: Solid samples are dried and prepared according to SOP 135 unless otherwise noted.		Certificate of Analysis Log = SNB14
Sample Prep Date(s): 2/15/12	5 ppb Standard and BS/MS spike wkg stock: 1ppm, date made: 1/4/12 SL		Pipets Log= SNB16
	Mfr: Environ Exp 1100119 Barcode: 12612 Exp. date: 12/11		Balance Log= SNB14
	(1 µl of 1000ppm added to 100 ml DI water)		
SOP R3-QA131	Second Source wkg stock (SCV): 1ppm date made: 1/18/12 SL		DI Water Resistivity >18 (MΩcm) (Y) N
	Mfr: Spex 16-87 Barcode: 12738 Exp. date:		Pipets Calibrated? (Y) N
	(1 µl of 1000ppm added to 100 ml DI water) 4/15/12		
Hotblock / (Waterbath)			Reagent purity correct (Y) N
Time Temp start: 11:00a / 94.6°C	SRM ID: NA Barcode:		BS and MS spike units = µl
Time/Temp stop: 1:00p / 95.0°C			
Dilution Water: volume 200 mls	5ppb Standard: volume 100 mls (not digested)		Second Source (SCV): volume 100 mls
(not digested) blank standard	Vol. of 1ppm soln added 500 µl		Vol of 1ppm soln added 200 µl (not digested)
Date: 2/16/12	0.2, 0.5, 1.0, 2.0, 3.0, 5.0 working standards - (not digested)		(Weight) / Volume

HNO_3 Vendor: Fisher	H_2SO_4 Vendor: Fisher	HCl Vendor: Fisher	Barcode: 12729	$KMnO_4$ Vendor: JWR/130H			
Barcode: 11156	Barcode: 11805	10 % rinse 2/16/12 SL	Date/Init:	Barcode: 12665			
K_2S_2O Vendor: Mallinckrodt	$SnCl_2$ Vendor: Agua Solutions	NaCl Vendor: JT Baker		$NH_2OH{\cdot}HCl$ Vendor: Fisher			
Barcode: 5866	Date/Init: 2/16/12 SL	Barcode: 11025	Date/Init: 2/16/12 SL	Barcode: 11017	Date/Init: 2/15/12 SL	Barcode: 12668	Date/Init: 2/15/12 SL

EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB21305 bch_mercury.rpt

LabNumber	Cont ID	Sample Type	pH	Initial (mL)	Final (mL)	Spike1	Spike1 Amount µl	Spike2	Spike2 Amount µl	SourceID	ExtractionComments	Observations
1202003-01	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-02	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-03	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-04	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-05	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-06	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-07	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-08	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-09	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-10	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-13	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-14	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-15	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-16	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-17	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-18	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-19	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-20	A D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-24	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-25	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
BB21305-BLK1				25	25					-		

EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB21305 bch_mercury.rpt

BB21305-BLK2				25	25					-		
BB21305-BS1				25	25	0700077	50			-		
BB21305-DUP1				25	25					1202003-01		
BB21305-DUP2				25	25					1202003-13		
BB21305-MS1				25	25	0700077	50			1202003-02		
BB21305-MS2				25	25	0700077	50			1202003-14		

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EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB21503 bch_mercury.rpt

Project: DAS R33907
Work Order No: 1202003
Site Name: Dimock Residential Groundwater
Analysis: Total Mercury by 245.1
Matrix: Water

DRAFT
Dimock 9th

Location: Analyst
EPA #3 Shelf 8B
Client: OSWER - Emergency Response
Account#: 2012T03N303DC6A3TARS0(
Method/SOP: EPA 245.1/R3QA131

Comments from WO:

EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD, PREPARATION LOG PNB186

Analyst: [illegible]	NOTE: Solid samples are dried and prepared according to SOP 155 unless otherwise noted.	Certificate of Analysis Log#: SNB14
Sample Prep Date(s): 2/21/12	5 ppb Standard and BS/MS spike wkg stock: 1ppm, date made: 1/24/12 SS	Pipets Log#: SNB16
	Mfr: Environ Expo Inc Barcode: 12612 Exp. date: 2/11	Balance Log#: SNB14
	(1 µl of 1000ppm added to 100 ml DI water)	
SOP R3-QA131	Second Source wkg stock (SCV): 1ppm date made: 1/18/12 SS	DI Water Resistivity >18 (MΩcm) (Y) N
	Mfr: Inorg 16-81 Barcode: 12738 Exp. date:	Pipets Calibrated? (Y) N
	(1 µl of 1000ppm added to 100 ml DI water) 4/15/12	
Hotblock / (Waterbath)		Reagent purity correct (Y) N
Time/Temp start: 11:45 94.6 °C	SRM ID: Barcode:	BS and MS spike units = µl
Time/Temp stop: 18:50 / °C		
Dilution Water: volume 200 mls	5ppb Standard: volume 100 mls (not digested)	Second Source (SCV): volume 100 mls
(not digested) blank standard	Vol. of 1ppm soln added 500 µl	Vol of 1ppm soln added 20 µl (not digested)
Date: 2/22/12	0.2, 0.5, 1.0, 2.0, 3.0, 5.0 working standards - (not digested)	(Weight) Volume

HNO_3 Vendor: Fisher	H_2SO_4 Vendor: Fisher	HCl Vendor: Fisher	Barcode: 12729	$KMnO_4$ Vendor: VWR/BDH
Barcode: 11156	Barcode: 11885	10 % rinse	Date/Init: 2/15/12 SS	Barcode: 12665 & 12681
K_2S_2O Vendor: Mallinkrodt	$SnCl_2$ Vendor: Aqua Solutions	NaCl Vendor: Fox Run		$NH_3OH{\cdot}HCl$ Vendor: Fisher
Barcode: 5866 Date/Init: 2/6/12 SS	Barcode: 11025 Date/Init: 2/15/12 SS	Barcode: 11019 Date/Init: 2/15/12 SS		Barcode: 12668 Date/Init: 2/15/12 SS

EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB21503 bch_mercury.rpt

LabNumber	Cont ID	Sample Type	pH	Initial (mL)	Final (mL)	Spike1	Spike1 Amount µl	Spike2	Spike2 Amount µl	SourceID	ExtractionComments	Observations
1202003-26	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-27	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-28	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-29	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-30	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-31	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-32	AD	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-33	AD	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-34	AD	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-35	AD	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-36	AD	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-37	AD	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-38	AD	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-39	AD	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-40	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-41	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-42	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-43	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-44	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-45	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202003-46	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	

EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB21503 **bch_mercury.rpt**

1202003-47	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
BB21503-BLK1				25	25					-		
BB21503-BLK2				25	25					-		
BB21503-BLK3				25	25					-		
BB21503-BS1				25	25	0700077	50			-		
BB21503-DUP1				25	25					1202003-26		
BB21503-DUP2				25	25					1202003-36		
BB21503-DUP3				25	25					1202003-46		
BB21503-MS1				25	25	0700077	50			1202003-27		
BB21503-MS2				25	25	0700077	50			1202003-37		
BB21503-MS3				25	25	0700077	50			1202003-47		

1202003

U.S. EPA Region 3 - FOR INTERNAL USE ONLY

Client: OSWER - Emergency Response
Project: DAS R33907
Final Report Due: 02/29/2012

Project Manager: Cindy Caporale
Site Name: Dimock Residential Groundwater
Acct#: 2012T03N303DC6A3TARS00

Report To:
Client Project Manager: Rich Fetzer
Email: fetzer.richard@epa.gov
Phone: (610) 861-2087
Fax: -

Project/WO Comments
Unvalidated data = 7 days (refer to Special Instructions)
Validated data = 21 days

Shelf
Analyst
EPA #3 Shelf 2B
EPA #3 Shelf 2D
EPA #3 Shelf 7B
EPA #3 Shelf 7C
EPA #3 Shelf 8B
EPA #5 VOA

Received By: Kevin Martin
Date Received: 02/07/12 11:17
Temperature Samples Received at: 4°C
Custody Seals Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirmed Yes
Received On Ice Yes
Radiation Checked Yes

ESAT INFO ONLY
Preliminary Report Due Date _____
ESAT Due Date _____
_____Complete _____Not Complete
_____Need TDF _____TDF #

DRAFT

Sample# 1202003-01
Sample Name: HW45
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/06/12 10:28
Expires: 03/05/12 10:28
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments: 1 Alcohol vial broken; OC for VOC, SVOC

Sample Logged In: 02/07/12 15:00
Sample Received: 02/07/12 11:17
Received

Sample# 1202003-02
Sample Name: HW45-P
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/06/12 11:06
Expires: 03/05/12 11:06
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/07/12 15:00
Sample Received: 02/07/12 11:17
Received

Sample# 1202003-03
Sample Name: HW43-P
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/06/12 12:19
Expires: 03/05/12 12:19
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/07/12 15:00
Sample Received: 02/07/12 11:17
Received

Sample Name: HW43		**Date Sampled**	02/06/12 12:06	**Sample Received:**	02/07/12 11:17
Sample Type: SAM					
Total Mercury by 245.1		**Expires:**	03/05/12 12:06	**Received**	
		Analysis Comments:	71/71 Drinking Water (Total/Dissolved)		
		Sample Comments:			

Sample#	1202003-05	**Lab\Report Matrix**	Water\Water	**Sample Logged In:**	02/07/12 15:00
Sample Name:	EB02	**Date Sampled**	02/05/12 15:00	**Sample Received:**	02/07/12 11:17
Sample Type:	SAM				
Total Mercury by 245.1		**Expires:**	03/04/12 15:00	**Received**	
		Analysis Comments:	71/71 Drinking Water (Total/Dissolved)		
		Sample Comments:			

Sample#	1202003-06	**Lab\Report Matrix**	Water\Drinking Water	**Sample Logged In:**	02/07/12 15:00
Sample Name:	HW45-F	**Date Sampled**	02/06/12 10:28	**Sample Received:**	02/07/12 11:17
Sample Type:	SAM				
Total Mercury by 245.1		**Expires:**	03/05/12 10:28	**Received**	
		Analysis Comments:	71/71 Drinking Water (Total/Dissolved)		
		Sample Comments:			

Sample#	1202003-07	**Lab\Report Matrix**	Water\Drinking Water	**Sample Logged In:**	02/07/12 15:00
Sample Name:	HW45-PF	**Date Sampled**	02/06/12 11:06	**Sample Received:**	02/07/12 11:17
Sample Type:	SAM				
Total Mercury by 245.1		**Expires:**	03/05/12 11:06	**Received**	
		Analysis Comments:	71/71 Drinking Water (Total/Dissolved)		
		Sample Comments:			

Sample#	1202003-08	**Lab\Report Matrix**	Water\Drinking Water	**Sample Logged In:**	02/07/12 15:00
Sample Name:	HW43-F	**Date Sampled**	02/06/12 12:06	**Sample Received:**	02/07/12 11:17
Sample Type:	SAM				
Total Mercury by 245.1		**Expires:**	03/05/12 12:06	**Received**	
		Analysis Comments:	71/71 Drinking Water (Total/Dissolved)		
		Sample Comments:			

DRAFT

Sample#	1202003-09	**Lab\Report Matrix**	Water\Water	**Sample Logged In:**	02/07/12 15:00
Sample Name:	EB02-F	**Date Sampled**	02/05/12 15:00	**Sample Received:**	02/07/12 11:17
Sample Type:	SAM				
Total Mercury by 245.1		**Expires:**	03/04/12 15:00	**Received**	
		Analysis Comments:	71/71 Drinking Water (Total/Dissolved)		
		Sample Comments:			

Sample#	1202003-10	**Lab\Report Matrix**	Water\Drinking Water	**Sample Logged In:**	02/07/12 15:00
Sample Name:	HW43-PF	**Date Sampled**	02/06/12 12:19	**Sample Received:**	02/07/12 11:17
Sample Type:	SAM				
Total Mercury by 245.1		**Expires:**	03/05/12 12:19	**Received**	
		Analysis Comments:	71/71 Drinking Water (Total/Dissolved)		
		Sample Comments:			

Sample#	1202003-13	**Lab\Report Matrix**	Water\Drinking Water	**Sample Logged In:**	02/08/12 12:32
Sample Name:	HW15a-P	**Date Sampled**	02/07/12 10:55	**Sample Received:**	02/08/12 11:15
Sample Type:	SAM				
Total Mercury by 245.1		**Expires:**	03/06/12 10:55	**Received**	
		Analysis Comments:	71/71 Drinking Water (Total/Dissolved)		
		Sample Comments:			

Sample Name: HW31-P
Sample Type: SAM
Total Mercury by 245.1

Date Sampled 02/06/12 18:28
Expires: 03/05/12 18:28
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Received: 02/08/12 11:15
Received

Sample# 1202003-15
Sample Name: HW30
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/06/12 14:34
Expires: 03/05/12 14:34
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/08/12 12:32
Sample Received: 02/08/12 11:15
Received

Sample# 1202003-16
Sample Name: HW30-P
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/06/12 15:00
Expires: 03/05/12 15:00
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/08/12 12:32
Sample Received: 02/08/12 11:15
Received

Sample# 1202003-17
Sample Name: HW31
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/06/12 18:20
Expires: 03/05/12 18:20
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/08/12 12:32
Sample Received: 02/08/12 11:15
Received

Sample# 1202003-18
Sample Name: FB11
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Water
Date Sampled 02/06/12 14:36
DRAFT
Expires: 03/05/12 14:36
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/08/12 12:32
Sample Received: 02/08/12 11:15
Received

Sample# 1202003-19
Sample Name: HW31z
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/06/12 18:20
Expires: 03/05/12 18:20
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/08/12 12:32
Sample Received: 02/08/12 11:15
Received

Sample# 1202003-20
Sample Name: HW15a
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/07/12 10:47
Expires: 03/06/12 10:47
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments: Vials broken for VOC (2), Alcohol (1)

Sample Logged In: 02/08/12 12:32
Sample Received: 02/08/12 11:15
Received

Sample# 1202003-24
Sample Name: HW30-PF
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/06/12 15:00
Expires: 03/05/12 15:00
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/08/12 12:32
Sample Received: 02/08/12 11:15
Received

Sample Name: HW15a-F	**Date Sampled** 02/07/12 10:47	**Sample Received:** 02/08/12 11:15
Sample Type: SAM		
Total Mercury by 245.1	**Expires:** 03/06/12 10:47	**Received**
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	

Sample# 1202003-26	**Lab\Report Matrix** Water\Drinking Water	**Sample Logged In:** 02/08/12 12:32
Sample Name: HW31-F	**Date Sampled** 02/06/12 18:20	**Sample Received:** 02/08/12 11:15
Sample Type: SAM		
Total Mercury by 245.1	**Expires:** 03/05/12 18:20	**Received**
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	

Sample# 1202003-27	**Lab\Report Matrix** Water\Drinking Water	**Sample Logged In:** 02/08/12 12:32
Sample Name: HW31z-F	**Date Sampled** 02/06/12 18:20	**Sample Received:** 02/08/12 11:15
Sample Type: SAM		
Total Mercury by 245.1	**Expires:** 03/05/12 18:20	**Received**
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	

Sample# 1202003-28	**Lab\Report Matrix** Water\Drinking Water	**Sample Logged In:** 02/08/12 12:32
Sample Name: HW30-F	**Date Sampled** 02/06/12 14:34	**Sample Received:** 02/08/12 11:15
Sample Type: SAM		
Total Mercury by 245.1	**Expires:** 03/05/12 14:34	**Received**
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	

Sample# 1202003-29	**Lab\Report Matrix** Water\Drinking Water	**Sample Logged In:** 02/08/12 12:32
Sample Name: HW31-PF	**Date Sampled** 02/06/12 18:28	**Sample Received:** 02/08/12 11:15
Sample Type: SAM		
Total Mercury by 245.1	**Expires:** 03/05/12 18:28	**Received**
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	

Sample# 1202003-30	**Lab\Report Matrix** Water\Drinking Water	DRAFT	**Sample Logged In:** 02/08/12 12:32
Sample Name: HW15a-PF	**Date Sampled** 02/07/12 10:55		**Sample Received:** 02/08/12 11:15
Sample Type: SAM			
Total Mercury by 245.1	**Expires:** 03/06/12 10:55		**Received**
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)		
	Sample Comments:		

Sample# 1202003-31	**Lab\Report Matrix** Water\Water	**Sample Logged In:** 02/08/12 12:32
Sample Name: FB11-F	**Date Sampled** 02/06/12 14:36	**Sample Received:** 02/08/12 11:15
Sample Type: SAM		
Total Mercury by 245.1	**Expires:** 03/05/12 14:36	**Received**
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	

Sample# 1202003-32	**Lab\Report Matrix** Water\Drinking Water	**Sample Logged In:** 02/09/12 11:15
Sample Name: HW38-P	**Date Sampled** 02/08/12 10:52	**Sample Received:** 02/09/12 10:45
Sample Type: SAM		
Total Mercury by 245.1	**Expires:** 03/07/12 10:52	**Received**
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	

Sample# 1202003-33
Sample Name: FB13
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix: Water\Water
Date Sampled: 02/08/12 09:00
Expires: 03/07/12 09:00
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-34
Sample Name: FB12
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix: Water\Water
Date Sampled: 02/07/12 13:35
Expires: 03/06/12 13:35
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-35
Sample Name: HW47
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix: Water\Drinking Water
Date Sampled: 02/08/12 11:50
Expires: 03/07/12 11:50
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-36
Sample Name: HW51
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix: Water\Drinking Water
Date Sampled: 02/07/12 13:48
Expires: 03/06/12 13:48
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-37
Sample Name: HW38
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix: Water\Drinking Water
Date Sampled: 02/08/12 10:41
Expires: 03/07/12 10:41
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

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Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-38
Sample Name: HW51-P
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix: Water\Drinking Water
Date Sampled: 02/07/12 13:56
Expires: 03/06/12 13:56
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-39
Sample Name: HW47-P
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix: Water\Drinking Water
Date Sampled: 02/08/12 12:25
Expires: 03/07/12 12:25
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-40
Sample Name: HW51-PF
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix: Water\Drinking Water
Date Sampled: 02/07/12 13:56
Expires: 03/06/12 13:56
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample Name: HW38-F
Sample Type: SAM
Total Mercury by 245.1

Date Sampled 02/08/12 10:41
Expires: 03/07/12 10:41
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Received: 02/09/12 10:45
Received

Sample# 1202003-42
Sample Name: HW47-PF
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/08/12 12:25
Expires: 03/07/12 12:25
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-43
Sample Name: HW38-PF
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/08/12 10:52
Expires: 03/07/12 10:52
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-44
Sample Name: FB13-F
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Water
Date Sampled 02/08/12 09:00
Expires: 03/07/12 09:00
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-45
Sample Name: FB12-F
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Water
Date Sampled 02/07/12 13:35
Expires: 03/06/12 13:35
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

DRAFT

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-46
Sample Name: HW51-F
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/07/12 13:48
Expires: 03/06/12 13:48
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

Sample# 1202003-47
Sample Name: HW47-F
Sample Type: SAM
Total Mercury by 245.1

Lab\Report Matrix Water\Drinking Water
Date Sampled 02/08/12 11:50
Expires: 03/07/12 11:50
Analysis Comments: 71/71 Drinking Water (Total/Dissolved)
Sample Comments:

Sample Logged In: 02/09/12 11:15
Sample Received: 02/09/12 10:45
Received

ENVIRONMENTAL EXPRESS

Certificate of Analysis

Product Description:

Name:	Mercury	Source Material:	Mercury Metal
Part Number:	**HP100033-1**	Material Purity:	99.9998%
Lot Number:	**1001119**	Matrix:	2% (v/v) HNO_3

Certified Value: 1000 µg/mL ± 6 µg/mL

The Certified value is based on gravimetric and volumetric preparation, and confirmed against SRM 3133 (lot number 061204) by inductively coupled plasma optical emission spectrometry (ICP-OES) using an internal laboratory-developed method. The uncertainty in the certified value is calculated for a 95% confidence interval and coverage factor *k* is about 2.

Uncertified Values:

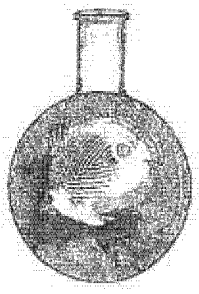
Density: 1.0095 g/mL @ 21.8°C

Impurity values via ICP Analysis in µg/L:
The typical values detected in the standard solution at 1000 µg/mL are listed below. The values are based upon the analysis results for the starting source material.

Ag	<0.02	Cu	<0.25	La	<0.02	Pt	<0.02	Te	<0.02
Al	<0.1	Dy	<0.02	Li	<0.02	Rb	<0.02	Th	<0.02
As	<0.05	Er	<0.02	Lu	<0.02	Re	<0.02	Ti	<0.02
Au	<0.02	Eu	<0.02	Mg	<0.5	Rh	<0.02	Tl	<0.02
B	<1	Fe	<1	Mn	<0.1	Ru	<0.02	Tm	<0.02
Ba	<0.02	Ga	<0.02	Mo	<0.02	Sb	<0.02	U	<0.1
Be	<0.02	Gd	<0.02	Na	<1	Sc	<0.02	V	<0.05
Bi	<0.02	Ge	<0.02	Nb	<0.02	Se	<0.1	W	<0.02
Ca	<0.1	Hf	<0.02	Nd	<0.02	Si	<1	Y	<0.02
Cd	<0.02	Hg	M	Ni	<0.02	Sm	<0.02	Yb	<0.02
Ce	<0.02	Ho	<0.02	Os	<0.02	Sn	<1	Zn	<0.1
Co	<0.05	In	<0.02	Pb	<0.05	Sr	<0.02	Zr	<0.02
Cr	<0.1	Ir	<0.02	Pd	<0.02	Ta	<0.02		
Cs	<0.02	K	<1	Pr	<0.02	Tb	<0.02		

Preparation Information:
The standard solution is prepared using high purity materials and assayed by analytical methods for conformity prior to use. This standard was prepared using the methods developed at NIST for SRM Spectrometric Standard Solutions under appropriate laboratory conditions.
Sub-boiling distilled high-purity acid has been used to place the materials in solution and to stabilize the standard. The matrix is as noted above in 18 megaohm deionized water.
Stability of this product is based upon rigorous short term and long term testing of the solution for the certified value. This testing includes, but is not limited to, the effect of temperature and packaging on the product.

490 Wando Park Blvd.
Mt. Pleasant, South Carolina 29464
Phone: 1.843.881.6560
Toll Free: 1.800.343.5319
FAX: 1.843.881.3964
www.environmentalexpress.com



Intended Use

This Certified Reference Material (CRM) is intended for use as a calibration standard for the quantitative determination of mercury, calibration of instruments such as ICPOES, ICPMS, AAS and XRF, and validation of analytical methods. It also can be used in EPA, ASTM and other methods.

Traceability Information:

The traceability of this standard is maintained through an unbroken chain of comparisons to appropriate standards with suitable procedure and measurement uncertainties.

a. **Standard Weight and Analytical Balance Calibration:**
The standard weights (NBS weights Inventory No 20231A) are calibrated every two years by South Carolina Metrology Laboratory that is a participant in "NIST Weights and Measures Measurement Assurance Program" with a certificate of measurement traceability to NIST primary standards.
The balances are calibrated yearly by the ISO 17025 accredited metrology service, and are calibrated weekly by an in-house method using standard weights.

b. **Volumetric Device Calibration**:
The calibration of volumetric vessels is checked annually using the NBS 602 method.

c. **Thermometer Calibration:**
The standard thermometers are calibrated every year by the ISO 17025 accredited metrology service. The thermometers used in-house are calibrated against the standard thermometers yearly.

d. **Calibration Standards:**
The Calibration Standard is directly traceable to SRM 3100 Series Spectrometric Standard Solutions.

Packaging and Storage Conditions:

The standard is packaged in a pre-cleaned polyethylene bottle. To maintain the integrity of this product, the solution should be kept tightly capped and stored under normal laboratory conditions.

Refer to Material Safety Datasheet (MSDS) for hazardous information.

DRAFT

Expiration Information:

The expiry date is guaranteed to be valid for eighteen months from the shipping date provided. For this reason, standards from the same lot may have different expiration dates.

Preparation Date: January 11, 2010
Shipped Date:
Expiration Date: DEC 201

Vanny T. Yib, Inorganic Laboratory Manager

Connie Hayes, Quality Manager

Theodore Rains, PhD, Laboratory Director

March 9, 2010

Certificate Issue Date

SPEXertificate®

Certificate of Reference Material

ACCREDITED
Reference Materials Producer
CERT #2495.01
Chemical Testing
CERT #2495.02

Catalog Number: PLHG4-2X/2Y/2T **Lot No.** 16-81HG

Description: 1000 mg/L Mercury

Matrix: 10% HNO_3

This **ASSURANCE®** Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for inorganic spectroscopic instrumentation such as ICP-OES, DCP, AA, ICP-MS, and XRF. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

Certified Value: 1003 mg/L

Uncertainty Associated with Measurement: ±3 mg/L

Certified Value is Traceable to: 3133*

* - indicates NIST SRM † - indicates SPEX CertiPrep CRM (when NIST SRM is not available)

The CRM is prepared gravimetrically using high purity Mercury Metal, Lot# 07071A. The certified value listed is the average of values obtained by classical wet assay and ICP spectrometer analysis.

Refer to side 2 for details of measurement uncertainties.

Classical Wet Assay: 1003 mg/L

Method: Titration with Ammonium Thiocyanate using Ferric Nitrate as indicator.

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Instrumental Analysis by ICP Spectrometer: 1002 mg/L

Uncertified Properties

Density: 1.049 g/mL @ 20.0°C

Trace Metallic Impurities in the Actual Solution via ICP/ICP-MS Analysis:

Element	mg/L	Element	mg/L	Element	mg/L	Element	mg/L	Element	mg/L	Element	mg/L
Ag	<0.003	Bi	<0.001	Fe	0.02	Mn	0.001	Rb	<0.001	Ti	<0.05
Al	<0.03	Ca	0.05	Ga	0.002	Mo	<0.005	Re	<0.001	Tl	<0.05
As	<0.05	Cd	<0.03	In	<0.001	Na	0.03	Sb	<0.003	V	<0.009
B	<0.05	Co	<0.002	K	<0.02	Ni	<0.002	Si	<0.1	Zn	0.01
Ba	<0.001	Cr	<0.01	Li	<0.01	Pb	0.1	Sr	<0.001	Zr	<0.002
Be	<0.03	Cu	0.01	Mg	<0.02						

Balances are calibrated regularly with weight sets traceable to NIST #32856, #32857 and others. This CRM is guaranteed stable and accurate to +/- 0.5% of the certified value. This includes uncertainty components due to preparation, homogeneity by the most precise method, short term and long term stability as well as transpiration loss. This guarantee is valid for a period of one year from the date of certification only when the material is kept tightly closed and stored under ambient laboratory conditions.

Date of Certification: APR 2011 Certifying Officer: Vanaja Sivakumar

Report of Certification

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001:2000, ISO 17025:2005, and ISO Guide 34:2000 quality system consistent with the following quality standards:

- Guide To The Expression Of Uncertainty In Measurement 1997
- EURACHEM/CITAC Guide: Quantifying Uncertainty in Analytical Measurement – Second Edition
- ASTM Guide D6362-98
- NIST Technical Note 1297
- ISO 17025:2005: General Requirements for the Competence of Testing and Calibration Laboratories – Certified by A2LA
- ISO Guide 31:2000: Reference Materials – Contents of Certificates and Labels
- ISO Guide 34:2000: General Requirements for the Competence of Reference Material Producers – Certified by A2LA
- ILAC-G12-2000: Guidelines for the requirements for the competence of reference materials producers
- ISO/REMCO N280
- Compliant with 10CFR50, Appendix B as applied to Chemicals & Reagents (NRC)
- Compliant with 10CFR21, Reporting of Defects and Non-compliance (NRC)

Material Source:

All analytes and matrix materials are obtained and verified by SPEX CertiPrep from pre-qualified vendors as per ISO 9001:2000, ISO 17025:2005, and ISO Guide 34:2000 guidelines. Vendor identifications are proprietary, however sources of all materials used in the preparation and testing of SPEX CertiPrep CRMs are tracked and documented. For further assistance, please contact the Sales Support Department at crmsales@spexcsp.com.

Instructions for Use:

Primary usage of this CRM is in neat form or diluted serially with matrix of a purity at or greater than the purity of the original matrix solution. If dilution is required the diluent must be compatible with all certified analytes and contain stabilizers appropriate for the period of intended use. The CRM can also be used as a spike or with a spike, again with appropriate compatibility considerations. All solutions should be thoroughly mixed, by shaking, prior to use and never pipetted directly from the bottle. All surfaces that come in contact with the solution must be thoroughly cleaned and leached prior to use. Dilutions should be performed only with Class A volumetric glassware.

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Method of Preparation:

Clean laboratory procedures and techniques have been used throughout the preparation. All materials, equipment, analytical instrumentation and personnel have been qualified prior to use. The highest purity acids applicable, 18 megohm, double deionized water, acid-leached triple-rinsed bottles (where appropriate), and Class A/calibrated volumetrics have been used in all preparations.

Homogeneity:

The homogeneity of the CRM has been confirmed by procedures consistent with ISO 17025:2005, ISO Guide 34:2000, and ASTM D6362-98 Appendix X2. Random, replicate samples of the final, packaged material have been analyzed to prove homogeneity in accordance with our internal procedure 4600-HOMOGEN-1A. This is consistent with the intended use of the CRM.

Statistical Estimator and Confidence Limits:

The certified value 'X' listed on the reverse of this document is at the 95% level of confidence and can be expressed as:

- $X = x \pm U$ where x=measured value, U=expanded uncertainty
- $U = ku_c$ where k=2 is the coverage factor at the 95% confidence level
  U_c is obtained by combining the individual element standard uncertainty components u_i, and $u_c = \sqrt{\sum u_i^2}$

Certification Traveler Report:

All certified values reported were derived from the Traveler Report (SPEX CertiPrep's traceability documentation) identified by the lot number of this CRM. For further assistance, please contact the Sales Support Department at crmsales@spexcsp.com.

Legal Notice:

SPEX CertiPrep reference materials are not for any cosmetic, drug or household application and are to be used only by qualified individuals who are trained in appropriate procedures. No claims against SPEX CertiPrep, Inc. of any kind whatsoever, whether based on breach of warranty, alleged negligence, or otherwise, with respect to this Reference Material shall be greater than the purchase price. In no event shall SPEX CertiPrep, Inc. be liable for any loss of profits or any incidental, special, or consequential damages.

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